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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/933,705
Filing Date: August 22, 2001
Appellant(s): MICHISHITA, YUKIO

Frederick E. Cooperrider
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/12/06 appealing from the Office action mailed 1/12/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner. The rejection of claims 4, 5, 7-11, 26-31, 33-35, and 37-39 are withdrawn due to disqualification of the prior art under 35 USC 103(c). The examiner notes that up until the filing of the appeal brief, Appellant hadn't provided showing under 37 CFR 1.132 or 37 CFR 1.131 that the invention disclosed in the reference was derived from the inventor of this application and is not an invention "by another" as required.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,301,404	YONEYAMA	10-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 6, 23, 25 32, and 36, are rejected under 35 U.S.C. 102(e) as being anticipated by Yoneyama (U.S. Patent No. 6,301,404).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claims 1, 23, and 32, Yoneyama teaches an optical transmission path monitoring system for monitoring optical transmission paths by wavelength-division multiplexing probe lights with signal lights of a wavelength division multiplexing optical transmission system, said optical transmission path monitoring system comprising: an optical fiber monitoring probe light (λ_{sv1} throughout) for monitoring optical fibers which constitute some parts of said optical transmission paths and an optical amplifier-repeater monitoring probe light (λ_{sv2} throughout) for monitoring optical amplifier-repeaters which constitute other parts of said optical transmission paths (see also column 11 lines 13-20, 35-40). Yoneyama further teaches a wavelength of said optical fiber monitoring probe light is such a wavelength as makes a wavelength dispersion of group delays over a full length of said optical transmission paths negative (e.g. to the left of the zero dispersion wavelength as noted in Figure 9), and a wavelength of said optical amplifier-repeater monitoring probe light is such a wavelength as makes the wavelength dispersion of said group delays over the full length of the optical transmission paths positive (e.g. to the right of the zero dispersion wavelength as noted in Figure 10).

Regarding claim 3, 25, and 36, Yoneyama teaches that said optical transmission paths have a zero dispersion wavelength (inherent in all fibers) which makes a wavelength dispersion of group delays over a full length of said optical transmission paths zero; a wavelength of said optical fiber monitoring probe light is on a shorter wavelength side than said zero dispersion wavelength (as noted in Figure 9), and a wavelength of said optical amplifier-repeater monitoring probe light is on a longer wavelength side than said zero dispersion wavelength (as noted in Figure 10).

Regarding claims 6, Yoneyama teaches that said optical detecting means optically detects by a coherent light detecting system (column 11 line 26) light components transmitted by said loop back means and outputted from said inward optical transmission path.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4-5, 7-11, 26-31, 33-35, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoneyama.

Regarding claims 4, 26, 33, and 34, Yoneyama teaches that said wavelength division multiplexing optical transmission system has two-core two-way optical transmission paths (e.g. "UP" "DOWN" paths shown in Figure 8), and is provided with a total of four probe lights (e.g. λ_{sv1} and λ_{sv2} from the left terminal in Figure 8, λ_{svX} and λ_{svY} from the right terminal in Figure 8) including said optical fiber monitoring probe light and said optical amplifier-repeater monitoring probe light delivering to each of the two outward optical transmission paths which said two-core two-way optical transmission paths have. Yoneyama differs from the claimed invention in that Yoneyama fails to specifically teach that every one of said four probe lights has a different wavelength from others. However, Yoneyama suggests as much by including two distinct transmission line supervisory circuits (reference numerals 47a, 47b in Figure 8) and by disclosing "multiple supervisory signals with different wavelengths" (column 15 lines 49-52).

Given the design of Yoneyama's system wherein supervisory signals traverse the same paths in different directions, one skilled in the art would clearly have recognized the necessity for making each of the four supervisory signals different wavelengths. One skilled in the art would have been motivated to do so in order to avoid interference between each of the cross propagating supervisory wavelengths. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to allow every one of said four probe lights to have a different wavelength from others.

Regarding claims 5 and 27 Yoneyama teaches probe light generating means (reference numeral 47a in Figure 8) for generating said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights, multiplexing means (reference numeral 45a in Figure 8) for multiplexing said probe lights with signal lights and delivering the multiplexed lights to said outward optical transmission path (reference numeral 41a in Figure 8), loop back means (reference numeral 30 in Figure 8) for branching reflected light components generating from said probe lights from said outward optical transmission path and coupling the branched lights with signal lights on said inward optical transmission path, and optical detecting means (reference numeral 47a in Figure 8) detecting said light components transmitted by said loop back means and outputted from said inward optical transmission path, said optical transmission paths are monitored on the basis of the output of said optical detecting means (column 11 lines 13-19).

Regarding claim 28 and 39, Yoneyama teaches that said optical detecting means optically detects by a coherent light detecting system (column 11 line 26) light components transmitted by said loop back means and outputted from said inward optical transmission path.

Regarding claims 7, 29, and 38, Yoneyama differs from the claimed invention in that Yoneyama fails to specifically teach a coherent homodyne light detection system wherein light partially branched from said optical fiber monitoring probe light is used as local oscillating light. However, coherent homodyne detection systems such as that claimed by the applicant are very well known in the art. Furthermore, the applicant discloses that coherent light detection systems can be used in the system (column 11 line 26). One skilled in the art would have been motivated to use a coherent homodyne light detection system wherein light partially branched from said optical fiber monitoring probe light is used as a local oscillating light in order to detect a difference between the received optical fiber monitoring probe light and the optical monitoring probe light emitted into the system, thereby allowing a measure of system parameters. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use a coherent homodyne light detection system wherein light partially branched from said optical fiber monitoring probe light is used as local oscillating light.

Regarding claims 8 and 30, Yoneyama appears to teach said optical detecting means optically detects by a direct light detecting system (reference numeral 47a in Figure 8) said light components transmitted by said loop back means and outputted from said inward optical transmission path.

Regarding claims 9-10, 35, Yoneyama teaches that said loop back means comprises two 2x2 optical couplers (reference numerals 32a, 32b, 33a, 33b, in Figure 7) inserted into said optical transmission paths and mutually connected by one each of optical terminals, and further comprising light reflecting means (reference numeral 32d, 32e, 33d, 33e in Figure 7).

Regarding claims 11, 31, and 35, Yoneyama differs from the claimed invention in that Yoneyama fails to specifically teach means for alternatively selecting said optical fiber monitoring probe lights and optical amplifier-repeater monitoring probe lights for supply said outward optical transmission path, and monitoring the optical fibers and the optical amplifier-repeaters on a time-division basis. However, time division multiplexing of optical signals is well known in the art and would have been obvious to one skilled in the art at the time the invention was made. One skilled in the art would have been motivated to incorporate time division multiplexing in to the system of Yoneyama in order to limit the amount of bandwidth occupied by the monitoring signals.

Regarding claim 37, Yoneyama teaches that said optical transmission paths have a zero dispersion wavelength (inherent in all fibers) which makes a wavelength dispersion of group delays over a full length of said optical transmission paths zero; a wavelength of said optical fiber monitoring probe light is on a shorter wavelength side than said zero dispersion wavelength (as noted in Figure 9), and a wavelength of said optical amplifier-repeater monitoring probe light is on a longer wavelength side than said zero dispersion wavelength (as noted in Figure 10).

(10) Response to Argument

Regarding Appellant's arguments A and B, the examiner notes that at no time has inherency been relied upon to meet the limitations of the claimed invention. Rather, the examiner has provided factual evidence in the disclosure in Yoneyama which, when considered in light of Appellant's specification and the cause-effect nature of the claim language, meets the limitations on the claimed invention.

To explain, Appellant claims that the wavelength of the optical fiber monitoring probe light, nothing more nothing less, is selected such that the wavelength itself makes the wavelength dispersion in the optical transmission paths negative. Similarly, Appellant claims that the wavelength of the optical amplifier-repeater monitoring probe light, nothing more nothing less, is selected such that the wavelength itself makes the wavelength dispersion in the optical transmission paths positive. In essence, what the Appellant has claimed is a cause and effect relationship wherein the selection of a particular wavelength for the optical fiber monitoring probe light and the selection of a particular wavelength for the optical amplifier-repeater monitoring probe light causes wavelength dispersion in the optical transmission paths to be negative or positive, respectively.

Looking to the specification for an understanding of how the selection of particular wavelengths can influence dispersion either positively or negatively, a few key facts come to light. First, Appellant discloses but does not claim, that the range of wavelengths carrying signals is between 1540.16 nm to 1559.79 nm (page 12 lines 25 through page 13 line 2 of Appellant's specification). Appellant further discloses but does not claim that at the center frequency, 1550 nm, the wavelength dispersion value is exactly zero, with any wavelength below 1550 being considered as producing a negative dispersion value while any wavelength above 1550 considered as producing a positive dispersion value (see Appellant's Figure 4 and accompanying description on page 12 lines 17-24 of the specification). In other words, any wavelength selected for the optical transmission path monitoring signal that lies below the center wavelength would induce a negative dispersion, while any wavelength selected for the optical amplifier-regenerator monitoring signal that lies above the center wavelength would induce a

positive dispersion. To be fair, the Appellant also discloses that the wavelengths of the monitoring signals actually lie just outside of the band of signal carrying wavelengths (11, 31, 12, 32 in Appellant's Figure 5). Therefore, consistent with the Appellant's specification, any wavelength below the center wavelength and just outside the band of signal-carrying wavelengths would produce a negative dispersion value, while any wavelength above the center wavelength and just outside the band of signal-carrying wavelengths would produce a positive dispersion value.

Turning to Yoneyama's figures 9 and 10, what is clearly shown and supported by the specification is a band of signal-carrying wavelengths λ_1-λ_4 multiplexed with monitoring signals λ_{sv1} in Figure 9 and λ_{sv2} in Figure 10 that lie just outside the wavelength band of the signal-carrying wavelengths. Within Yoneyama's wavelength band of signal-carrying wavelengths λ_1-λ_4 lies the center frequency of the band, presumably between λ_2 and λ_3, which the Appellant has defined as the demarcation point between wavelengths that produce a negative dispersion and those that produce a positive dispersion. For the sake of clarity, Figures 9 and 10 are shown separately so that the path taken by each monitoring signal, e.g. λ_{sv1}, λ_{sv2}, can be easily illustrated. In practice (column 10 lines 16-18, 42-44 of Yoneyama), both monitoring signals are launched at the same time into a single system and propagate through that single system shown in Figure 8.

Given that Yoneyama teaches that monitoring signal λ_{sv1} in Figure 9 lies to the left of, and therefore has a lower wavelength than the center wavelength of the signal-carrying wavelengths, and λ_{sv2} in Figure 10 lies to the right of, and therefore has a higher wavelength than the center wavelength of the signal-carrying wavelengths, it stands to argue that the wavelengths selected

by Yoneyama will cause the same effect as that claimed by the Appellant. This is particularly true given that the monitoring probe light wavelengths selected by Yoneyama meet the Appellant's own definition of wavelengths that produce the dispersion effects claimed. More concretely, the wavelengths selected by Yoneyama meet the exact same criteria which the Appellant has disclosed as being the cause which makes the wavelength dispersion in the optical transmission path either positive or negative, namely, a monitoring probe light λ_{sv1} which has a lower wavelength than the center wavelength of the signal-carrying wavelengths and lies just outside the wavelength band of the signal-carrying wavelengths, and a monitoring probe light λ_{sv2} which has a higher wavelength than the center wavelength of the signal-carrying wavelengths and lies just outside the wavelength band of the signal-carrying wavelengths. The examiner's position is further solidified when one compares and contrasts Appellant's Figure 4 to the selected wavelengths disclosed in Yoneyama's system. Here, Yoneyama's center wavelength, e.g. the wavelength located somewhere between λ_2 and λ_3 of the signal-carrying wavelengths λ_1-λ_4, is equivalent to Appellant's center wavelength shown as 1550 nm in Figure 4. Applying what is shown in Appellant's Figure 4 to Yoneyama's wavelengths, it becomes clear that Yoneyama's monitoring light probe signals, e.g. λ_{sv1} and λ_{sv2} discussed above, would clearly lie on either side of the Yoneyama's center wavelength. It bears repeating that the Appellant has disclosed that the center wavelength and the zero dispersion wavelength on the transmission path are one in the same. As such, according to Appellant's Figure 4, this places λ_{sv1} clearly in the "Negative Dispersion Region" while λ_{sv2} clearly lies in the "Positive Dispersion Region."

While the Appellant discloses in the specification that a variety of fibers are used to form the transmission path, this distinguishing combination of fibers is never positively recited as a limitation in the claims. In fact, the claim language never positively recites anything regarding the composition of the fibers or the dependence of dispersion on the composition of the transmission fibers. The only dispersion-relevant limitation the claim language positively recites is a monitoring probe light signal at a wavelength that "makes" the wavelength dispersion in the optical transmission path either positive or negative. In light of the lack of a positive recitation in the claims regarding the composition of the transmission fibers, the examiner notes that it has been judicially determined that, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Moreover, the examiner reiterates that in fact Yoneyama shows the exact same wavelength positioning of the optical fiber monitoring probe lights, e.g. at opposite ends of the wavelength band and just outside of the signal-carrying wavelength band, and further discloses the use of a fiber optic cable as the transmission medium just as claimed. Given these things, one must ask what, besides the Appellant's specification, says that the wavelengths of Yoneyama also do not cause the same effects as those claimed by the Appellant? The Appellant's claim language surely does not.

To directly rebut the Appellant's assertions regarding the fiber's composition, the examiner is of the opinion that if the Appellant feels so strongly that the composition of the fibers themselves provides patentably distinguishing characteristics, then those characteristics should be positively recited. Otherwise, what's left of the claim language and disclosed for the public to make sense of is a recitation that somehow a particular wavelength makes wavelength

dispersion in the optical transmission path either positive or negative, with no mention of the importance the composition of the fiber plays. As such, and lacking a recitation in the claims reflecting the importance a certain fiber composition has on whether the selected monitoring probe light wavelength tilts the wavelength dispersion of the optical transmission paths positive or negative, there remains nothing in the claims which clearly distinguishes the claimed invention from Yoneyama.

Turning now to the balance of Appellant's arguments, Appellant contends that Yoneyama's λ_{sv1} does not specifically monitor optical fibers and that Yoneyama's λ_{sv2} does not specially monitor amplifier-repeaters. In the argument, what Appellant implies but does not claim is that the optical fiber monitoring probe light is strictly dedicated to only monitoring optical fibers, while the optical amplifier-repeater monitoring probe light is strictly dedicated to only monitoring optical amplifier-repeaters. However, the claim language is not as strict and only requires that there be an optical fiber monitoring probe light and an optical amplifier-repeater monitoring probe light, with no indication that said monitoring probe lights are strictly dedicated in what they are allowed to monitor.

In fact and as noted by the Appellant, Yoneyama discloses that each monitoring light of the system concurrently monitors the optical fiber and the optical amplifier-repeaters of the system. As such, when given the broadest reasonable interpretation of the claim language, Yoneyama provides the claimed optical fiber monitoring probe light and optical amplifier-repeater monitoring probe light. In fact, Yoneyama provides a pair of each type of monitoring probe light being that each of Yoneyama's monitoring probe lights monitors both the optical fibers of the system and the optical amplifier-repeaters of the system. The key here is that the

claim language does not preclude the use of a dual purpose monitoring probe light, e.g. a monitoring probe light that monitors both the fibers and amplifier-repeaters of the system, and in fact only requires that there be one probe light to monitor the optical fiber and another probe light monitoring the optical amplifier repeaters. Given the lack of claim language which regulates said monitoring probe lights to a single purpose, the examiner asserts that Yoneyama meets the limitations of the claim in that a first probe light monitors the optical fibers and, as a side benefit, concurrently monitors the optical amplifier-repeaters, while a second probe light monitors the optical amplifier-repeaters, and, as a side benefit, concurrently monitors the optical fibers.

Finally, in response to Appellant's various recognitions, the examiner notes that the listed recognitions fail to translate into positively recited limitations in the claim.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

A. Bello

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Primary Examiner

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